

In the Claims:

1 – 51. (Cancelled)

52. (currently amended) Apparatus for blood glucose control, comprising:

at least one implantable electrode configured to be mounted attached to muscle tissue in the abdominal cavity;

timing circuitry which determines a synchronization of electrification of said electrode relative to a time of an action potential in tissue by one or both of (a) sensing electrical activity in tissue via at least one of said at least one implantable electrode and (b) causing said action potential by sending a pacing signal through said electrode; and

circuitry, which electrifies said at least one electrode in a manner suitable for blood glucose level control, said manner including at least one pulse train wherein each pulse is between at least 1 millisecond long and 2 seconds long~~wherein said train is shorter than 20 seconds, wherein said electrification is not said pacing signal and is not excitatory to muscle tissue.~~

53. (currently amended) Apparatus according to claim 52, wherein said circuitry is a closed loop system which closes a loop to a stored desired blood glucose level using an electrical stimulation by said circuitry and a sensor which senses an effect of the electrification using the electrical stimulation and wherein said circuitry is configured to electrify said electrode using a stored set of stimulation parameters from a plurality of stored sets and wherein said stored set is selected by said circuitry to be more than sufficient to reduce glucose levels to said desired, safe, glucose level~~more than necessary for achieving a desired blood glucose modification by said electrification, when the sensed effect does not indicate with certainty that the electrification achieved said desired blood glucose modification.~~

54. (Previously Presented) Apparatus according to claim 52, wherein said circuitry is a semi-open loop system where a long stimulation series, sufficient to reduce blood glucose levels from a clinically elevated level to a normal level, is applied without feedback.

55. (Original) Apparatus according to claim 52, wherein said circuitry is an open loop system where a stimulation series is applied responsive to a trigger and without feedback.

56 – 78. (Cancelled)

79. (currently amended) Apparatus according to claim 52, wherein said circuitry is configured to electrify said electrode in a manner which generates an electric field that reduces glucose levels even without ~~the~~ any mediation of insulin.

80. (Previously Presented) Apparatus according to claim 52, wherein said circuitry is configured to electrify said electrode in a manner which generates an electric field that reduces glucagon secretion.

81. (Previously Presented) Apparatus according to claim 52, wherein said circuitry configured to electrify said electrode in a manner which generates an electric field that reduces or prevents a substantial increase in insulin secretion.

82. (Previously presented) Apparatus according to claim 52, wherein said circuitry comprises a programmable controller and wherein said controller is programmed with information pertaining to a slow acting chemical-based insulin therapy provided to a pancreas.

83. (Previously Presented) Apparatus according to claim 52, comprising an automatic glucose sensor for automatically detecting a situation requiring an acute response.

84. (Previously Presented) Apparatus according to claim 52, comprising an automatic glucose sensor for automatically detecting a situation requiring an acute insulin response.

85. (Previously Presented) Apparatus according to claim 52, wherein said electrification acts as an acute insulin response in reducing glucose levels.

86. (Cancelled)

87. (Previously Presented) Apparatus according to claim 52, wherein said electrode is adapted for attachment to a muscular organ.

88 – 100. (Cancelled)

101. (Previously presented) An apparatus according to claim 52, wherein said electrification reduces elevated blood glucose levels by at least 20% of an elevation of the glucose level above a fasting baseline glucose level.

102. (Previously Presented) Apparatus according to claim 52, wherein said circuitry configured to electrify said electrode in a manner which generates an electric field that reduces blood insulin levels, as measured by an accumulated amount for a glucose ingestion event and in comparison to a regular response of said person, by more than 20%.

103. (Previously Presented) Apparatus according to claim 108, wherein said circuitry electrifies said at least one electrode for a given period of time 5 times per second.

104. (currently amended) Apparatus according to claim 108, wherein said circuitry is configured so that an application applied at said application frequency is shorter than 30ms.

105. (Previously Presented) Apparatus according to claim 52, wherein said electrification is non-excitatory in that it does not substantially induce previously presented bursts of islet activity in a pancreas.

106. (Previously Presented) Apparatus according to claim 52, wherein said at least one electrode comprises an implantable electrode adapted for attachment to a stomach.

107. (currently amended) Apparatus according to claim 52, wherein said circuitry electrifies said at least one electrode in synchrony with ~~local~~ electrical activity determined by said timing circuit and corresponding to the propagation of action potentials in a portion of the stomach due to electrical activity of the stomach.

108. (Previously Presented) Apparatus according to claim 52, wherein said circuitry electrifies said at least one electrode with an electric field that significantly reduces high blood glucose levels, and does not substantially reduce normal blood glucose levels.

109. (currently amended) Apparatus according to claim 52, wherein said circuitry electrifies said at least one electrode ~~is electrified~~ to have an application frequency of an electric field between 1 and 15 times per second.

110. (Previously Presented) Apparatus according to claim 52, wherein said at least one electrode is configured for attachment to the GI tract.

111. (currently amended) Apparatus according to claim 52, wherein said at least one electrodes ~~are~~is configured for attachment to the duodenum.

112. (Previously Presented) Apparatus according to claim 81, wherein said electrification reduces blood glucose levels.

113. (currently amended) Apparatus according to claim 52, wherein said electrode is configured for being sutured to said muscle.

114. (Previously presented) Apparatus according to claim 52, wherein said electrode is a bipolar electrode mounted on an implantable lead.

115. (Previously presented) Apparatus according to claim 52, wherein said circuitry includes an input indicating digestion and electrifies said at least one electrode for at least 15 minutes during digestion of a meal.

116. (currently amended) Apparatus according to claim 107, wherein said circuitry electrifies said at least one electrode for at least 0.5 seconds in response to detection of an action potential in the stomach by said timing circuitry, for at least 5 such detections.

117. (Previously presented) Apparatus according to claim 116, wherein said circuitry electrifies said at least one electrode for less than 20 seconds in response to detection of an action potential in the stomach.

118. (Previously presented) Apparatus according to claim 116, wherein said circuitry electrifies said at least one electrode for less than 10 seconds in response to detection of an action potential in the stomach.

119. (Previously presented) Apparatus according to claim 116, wherein said circuitry electrifies said at least one electrode in a manner which does not affect nervous tissue.

120. (Previously presented) Apparatus according to claim 107, wherein said circuitry electrifies said at least one electrode also in a manner which paces said stomach.

121. (Previously presented) Apparatus according to claim 107, wherein said circuitry electrifies said at least one electrode in a manner which does not cause the propagation of an action potential in said stomach or a pancreas.

122. (currently amended) Apparatus according to claim 52, comprising a digestion sensor, wherein said circuitry is configured to use feedback from a digestion sensor to control ongoing electrification.

123. (currently amended) Apparatus according to claim 52, wherein said circuitry electrifies said at least one electrode ~~is electrified~~ with a frequency of between 50 and 150 Hz.

124. (New) Apparatus according to claim 52, wherein said timing circuitry comprises pacing circuitry.

125. (New) Apparatus according to claim 52, wherein said timing circuitry comprises depolarization detection circuitry.

126. (New) Apparatus according to claim 52, wherein said train is between 1 and 10 seconds long.

127. (New) Apparatus according to claim 107, wherein said circuitry electrifies said at least one electrode for at least 1 second in response to detection of an action potential in the stomach by said timing circuitry, for at least 5 such detections.